



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/036,809

12/31/2001

Ge Nong

01-HK-048  
(STM101-01048)

5323

7590

10/05/2005

Lisa K. Jorgenson  
STMicroelectronics, Inc.  
1310 Electronics Drive  
Carrollton, TX 75006

EXAMINER

MURPHY, RHONDA L

ART UNIT

PAPER NUMBER

2667

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/036,809

Applicant(s)

NONG, GE

Examiner

Rhonda Murphy

Art Unit

2667

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 4 is objected to because of the following minor informality: For the purpose of maintaining consistency, it is suggested to change "n" to "N" on line 14. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1- 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishna et al. (US 6,563,837) in view of Koning et al. (US 6,125,112).

**Regarding claims 1 and 4,** Krishna teaches a switch fabric (Fig. 1; switch fabric 89) comprising: N input buffers (queues 56, 57, 58) capable of receiving incoming fixed-size data packets at a first data rate and outputting said fixed-size data packets at a second data rate equal to at least twice said first data rate (col. 8, lines 34-38); N output buffers (queues 65) capable of receiving fixed-size data packets at said second data rate and outputting said fixed-size data packets at said first data rate (col. 8, lines 11-15); and a non-blocking interconnecting network capable of receiving from said N input buffers said fixed-size data

Art Unit: 2667

packets at said second data rate and transferring said fixed-size data packets to said N output buffers at said second data rate (col. 3, lines 63-65).

Krishna fails to explicitly disclose a bufferless interconnecting network.

However, Koning discloses a bufferless, non-blocking interconnecting network.

In view of this, it would have been obvious to one skilled in the art to modify Krishna's system to incorporate a bufferless interconnecting network for the purpose of preventing internal bottlenecks and providing maximum efficiency (col. 2, lines 1-3; 13-15).

**Regarding claims 2 and 5**, Krishna teaches a non-blocking interconnecting network, but fails to explicitly disclose a bufferless, non-blocking interconnecting network comprising a bufferless crossbar.

However, Koning teaches a bufferless, non-blocking interconnecting network comprising a bufferless crossbar (col. 2, lines 1-3; 13-15).

In view of this, it would have been obvious to one skilled in the art to modify Krishna's system by including a bufferless crossbar, for the purpose of preventing internal bottlenecks and providing maximum efficiency (col. 2, lines 1-3; 13-15).

**Regarding claims 3 and 6**, Krishna teaches each of said N input buffers is at least twice the size of each of said N output buffers (see Fig. 1).

**Regarding claims 7 and 14**, Krishna teaches a plurality of fixed-size data packet switches (Fig. 1, network device 49; col. 7, lines 35-36), at least one of said fixed-size data packet switches comprising: N input ports capable of receiving

Art Unit: 2667

incoming fixed-size data packets at a first data rate and outputting said fixed-size data packets at said first data rate (Fig. 1, ports 50, 51, 52; col. 4, lines 20-25; col. 8, lines 34-38); N output ports capable of receiving fixed-size data packets at said first data rate and outputting said fixed-size data packets at said first data rate (ports 59, 60, 61; col. 4, lines 20-25; col. 8, lines 10-15 ); and a switch fabric interconnecting said N input ports and said N output ports comprising (switch fabric 89; col. 6, lines 60-61): N input buffers (queues 56, 57, 58) capable of receiving incoming fixed-size data packets at said first data rate and outputting said fixed-size data packets at a second data rate equal to at least twice said first data rate (col. 8, lines 34-38); N output buffers (queues 65) capable of receiving fixed-size data packets at said second data rate and outputting said fixed-size data packets at said first data rate (col. 8, lines 11-15); and a non-blocking interconnecting network capable of receiving from said N input buffers said fixed-size data packets at said second data rate and transferring said fixed-size data packets to said N output buffers at said second data rate (col. 3, lines 63-65).

Krishna fails to explicitly disclose a bufferless interconnecting network.

However, Koning discloses a bufferless, non-blocking interconnecting network.

In view of this, it would have been obvious to one skilled in the art to modify Krishna's system to incorporate a bufferless interconnecting network for the purpose of preventing internal bottlenecks and providing maximum efficiency (col. 2, lines 1-3; 13-15).

Art Unit: 2667

**Regarding claims 8 and 15**, Krishna teaches a non-blocking interconnecting network, but fails to explicitly disclose a bufferless, non-blocking interconnecting network comprising a bufferless crossbar.

However, Koning teaches a bufferless, non-blocking interconnecting network comprising a bufferless crossbar (col. 2, lines 1-3; 13-15).

In view of this, it would have been obvious to one skilled in the art to modify Krishna's system by including a bufferless crossbar, for the purpose of preventing internal bottlenecks and providing maximum efficiency (col. 2, lines 1-3; 13-15).

**Regarding claims 9 and 16**, Krishna teaches each of said N input buffers is at least twice the size of each of said N output buffers (see Fig. 1).

**Regarding claims 10 and 17**, Krishna teaches a scheduling controller capable of scheduling transfer of said fixed-size data packets from said N input ports to said switch fabric (arbiter 90; col. 8, lines 24-27).

**Regarding claims 11 and 18**, Krishna teaches a scheduling controller capable of scheduling transfer of said fixed-size data packets from said N output ports to an external device (col. 8, lines 5-15; 24-27).

**Regarding claims 12 and 19**, Krishna teaches a scheduling controller capable of scheduling transfer of said fixed-size data packets from said N input buffers to said bufferless, non-blocking interconnecting network (col. 8, lines 5-15; 24-27).

**Regarding claims 13 and 20**, Krishna teaches a scheduling controller capable of scheduling transfer of said fixed-size data packets from said N output buffers to said N output ports (col. 8, lines 5-15; 24-27).

### ***Conclusion***

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

\*Dell et al. (US 2002/0075883) discloses a three-stage switch fabric with input device features.

\*Ku et al. (US 2002/0085545) discloses a non-blocking virtual switch architecture.

\*Lee et al. (US 5,821,875) discloses a data switching device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571) 272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

Art Unit: 2667

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rhonda Murphy  
Examiner  
Art Unit 2667

rlm

  
CHI PHAM  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2667 10/3/05